CURRICULUM

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CURR HIST

DIPLOMA EXAMINATIONS

CURRICULUM SPECIFICATIONS

for

BIOLOGY 30

JULY 1983
Revised

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Introduction

The Biology 30 curriculum specifications were originally prepared in July 1981 by a committee of classroom teachers, consultants, university personnel, and Alberta Education staff under the direction of the Curriculum Branch. The specifications are based on the 1978 program of studies and were validated by practicing biology teachers throughout the province in the fall, 1981.

Purpose of Curriculum Specifications

Curriculum specifications identify the specific course content and the relative emphases to be placed thereon for the purposes of instruction and evaluation. Evaluation at both the provincial level and the school level should be guided by these specifications. For these purposes, the Biology 30 specifications indicate the per cent weightings to be placed on the components of the program (i.e., process skills, psychomotor skills, attitudes, and concepts) and the priority to be assigned to the subject matter. The specifications do not necessarily reflect the amount of instructional time to be devoted to each component, but should serve as a guide in presenting the course. The reader is advised to consult the curriculum guide for this purpose or for further information regarding course objectives, program organization, and suggested methodology.

Weighting Factors

Two measures have been utilized to specify the relative weighting to be placed on course content.

1. Per Cent Emphasis

   Table 1 indicates the per cent emphasis to be placed on each of the components of the course and the subject matter. The per cent emphases assigned to the *Student Project* and *Current Biological Problems* have been allocated to the concept section of the curriculum specifications for examination purposes.

2. Priority Rating

   While all the content of the Biology 30 course is deemed important, some concepts and skills have greater importance than others and this should be reflected in the instruction given to students. The priority rating serves to highlight these differences for instruction and evaluation purposes.

CODE: A - high priority
B - medium priority
C - low priority

Objective statements which have low priority status should not be passed over quickly or ignored. Each objective statement contributes to the overall program and is necessary to the student's full understanding of the subject. Provincial testing will include items from all three priority levels.

TABLE 1
BIOLOGY 30

CONTENT COMPONENT	EMPHASIS IN PER CENT
PROCESS SKILLS	20
PSYCHOMOTOR SKILLS	5
ATTITUDES	15
CONCEPTS	60

DIPLOMA EXAMINATION

The Grade 12 Diploma Examination for Biology 30 will include items related to physical properties of cells, autotrophic and heterotrophic nutrition, circulation in animals, gas exchange, cellular respiration, excretion, metabolic controls in both plants and animals, and human reproduction.

The scientific process skills of predicting, hypothesizing, controlling variables, classifying, interpreting data, observing, inferring, designing experiments, and defining operationally are dealt with to the extent pencil-and-paper testing permits. The experiences gained by direct, hands-on activities are, understandably, difficult to measure outside a laboratory situation and should be reflected in student performance as evaluated by the teacher.

Subject matter in the attitudinal and psychomotor components of the program are excluded from the diploma examination.

A bulletin outlining the per cent emphases to be placed on Biology 30 content in the diploma examination will be forwarded to all schools by the Student Evaluation Branch.

BIOLOGY 30 PROVINCIAL PILOT

A revised Biology 30 outline will be piloted in selected schools in the first semester of the 1983-84 school year. The proposed course outline varies from the 1975 program in the emphases placed on certain concept areas and excludes the section dealing with plant anatomy and physiology. The diploma examination will take into account the differences between the two courses, and ensure that no inequities result from this situation. Pilot teachers involved will be briefed on any adjustments in their instruction pertaining to this issue at the beginning of the school term.

Should further information or clarification be required on this matter, please contact the Curriculum Branch at 427-2982.

PROGRAM COMPONENTS

A. PROCESS SKILLS 20%

Process skills, in part, can utilize the *Student Project* and *Current Biological Problems* units as vehicles within which testing can take place. Laboratory investigations and field activities contribute to process skill development.

PRIORITY RATING		EMPHASIS IN PER CENT
C	Observing	2
C	Measuring	
C	Classifying	
C	Communicating	
A	Predicting	8
A	Inferring	
A	Controlling variables	
A	Interpreting data	
A	Defining operationally	5
A	Formulating models	

PRIORITY RATING		EMPHASIS IN PER CENT
A	Hypothesizing	4
A	Experimenting	
A	Processing data	
A	Identifying problems	
B	Seeking further evidence	1
B	Applying discovered knowledge	
B.	**PSYCHOMOTOR SKILLS**	**5%**
B	Develop and calibrate tools and instruments	5%
A	Manipulate apparatus and equipment	
A	Develop proficiency in use of various tools and instruments	
A	Carry out various accepted procedures and techniques	
A	Develop safe practices and procedures	
C.	**ATTITUDES** Attitudes to be developed in Biology 30 are reflected in the following objectives.	**15%**
	Interdependence of living things	equal emphasis
B	Develop an understanding of the interdependence of living things upon themselves and upon climatic and soil factors	

PRIORITY RATING		EMPHASIS IN PER CENT
	Dependence of man on the natural environment	15%
B	Examine the dependence of man on his natural environment, the ways in which man is causing problems by upsetting the balance of nature, and ways in which man can live in greater harmony with nature	
	Scientific attitudes	
B	Develop attitudes, interests, values, appreciations and adjustments similar to those ideally exhibited by scientists at work	
	Awareness and understanding of environment	
B	Develop an awareness and understanding of the environment with positive attitudes and behaviors toward its use	

D. CONCEPTS (SUBJECT MATTER) **(40%) 60%**

Note: Because of the unstructured nature of the *Student Program Project* unit and the *Current Biological Problems* unit, testing of this component of the program can be accomplished by utilizing items from the process skills, psychomotor skills, and attitude components.

Because of the unspecified subject matter of these two units, the percentage allotments for the units have been prorated to the concept sections of Biology 30. The numbers in brackets represent percentage allotments prior to prorating, e.g., the 8% emphasis given to physical properties of cells takes into account the percentage prorated from the *Student Project* and the *Current Biological Problems* units.

PRIORITY RATING			EMPHASIS IN PER CENT
B	Physical properties of cells	1. Chemistry of cells	(5) 8
		a. Review of background chemistry	
		b. Biochemistry of cells	
A		2. Physical processes	
		a. Diffusion and osmosis	
		b. Active transport	
		c. Endocytosis and exocytosis	
		d. Enzyme function	
A	Nutrition	1. Autotrophic nutrition	(8) 12
		a. Absorption and transport of water, minerals, and gases	
		b. Translocation of nutrients	
		c. Photosynthesis	
		d. Chemosynthesis	
A		2. Heterotrophic nutrition	
		a. Alimentation	
		b. Absorption	
A	Circulation in animals	1. Heart and blood vessels	(5) 8
A		2. Blood and blood function	
B		3. Lymph and lymph function	
A		4. Control of circulation	
B	Gas exchange	1. Mechanism of breathing	(3) 4
A		2. Exchange and transport of gases	
A		3. Control of gas exchange	

PRIORITY RATING			EMPHASIS IN PER CENT
A	Cellular respiration	1. Energy release a. Aerobic respiration b. Anaerobic respiration	(3) 4
B		2. Energy utilization a. Muscular contraction b. Absorptive activity c. Electrochemical activity	
A	Excretion	1. Kidney function	(3) 4
A		2. Body fluid balance	
B	Metabolic controls	1. Genetic control of hormones and nervous responses	(10) 15
A		2. Hormonal control a. Plants b. Animals	
A		3. Nervous control a. Receptors b. Conductors c. Effectors	
A	Human reproduction	1. Human reproduction a. Anatomy of reproductive organs b. Hormones c. Pregnancy, fetal development, and birth	(3) 5

PRIORITY RATING			EMPHASIS IN PER CENT
	Current biological problems	(See note page 7)	(10)
	Student projects	(See note page 7)	(10)

QH 315-5 C976 1983 C-3
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